Comte's Lamarckian Heritage

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Comte praised Lamarck highly as a biologist and attributed to him two main contributions: his seminal contribution to environmental theory and the way he conceived animal hierarchy. Given that the first point is now well documented, we are only dealing with the second one, which is less favorable to Comte, as biologists disagree today with Lamarck on this subject. We explain first how Comte uses biology in his sociology: the Lamarckian animal series is the first scientific example of progress and social progress is only an extension of it. We then present the Lamarck-Cuvier controversy about classification and show how Lamarck's insistence on the role of external circumstances was a way out of the difficulties he encountered in the construction of the animal series.

Classification, animal series, environment, biology and sociology.

L'humanité ne constituant, au fond, que le principal degré de l'animalité, les plus hautes notions de la sociologie, et même de la morale, trouvent nécessairement en biologie leur première ébauche, pour les esprits vraiment philosophiques qui savent les y saisir
A. Comte

1. Introduction.

In the controversy concerning species fixity, Comte sided with Cuvier. Nevertheless, he always considered Lamarck a better biologist than Cuvier, as shown by the fact that the former, not the latter, appears in the positivist calendar. The reasons for such preference were twofold. On the one hand, Lamarck conceives organic hierarchy in a much more satisfactory way than Cuvier does. Indeed, for social static, *i. e.* sociology's section that deals with social order, classification is as important as it is for a biologist. On the other hand, Comte sees Lamarck's notion of « ambient environment » as a fundamental contribution to biology. However, his final judgment is balanced: Lamarck's ideas are good, but the way he explains them is unsatisfactory. The best example is to be found precisely in the controversy with Cuvier. As a matter of fact, Lamarck's error comes precisely from the fact that he gives external circumstances a role they do not have. He did not see that, besides the action of environment upon the organism, there is also an action of the organism upon its environment, - a fact that is crucial if we are to understand man's action upon nature. Nevertheless, in both cases, according to Comte, Lamarck made

important contributions: he brought new ideas and opened new directions to be followed by biologists; this cannot be said about Cuvier.

In many respects, the second idea is the more interesting one, as it opens up an avenue to some of the most unexpected aspects of late positivism; namely, its concern with ecology, sustainable development and biotechnology. But the subject has already been dealt with (Braunstein, 1997, 2009) and I do not want to revisit it. For this reason, I shall focus instead on the alleged superiority of Lamarck concerning animal hierarchy. As we shall see, such superiority is far from evident, but the topic is very important for Comte as it has a bearing on the relationship of sociology with biology.

Regarding the Lamarck-Cuvier controversy, Comte unambiguously sided with the latter. While Lamarck's position allows for an endless variability of species, one of the tenets of positivism holds that, if laws do not exclude possible variation, there are always limits to the variation of any phenomenon. However, Comte's agreement with Cuvier on this point is only half of the matter. The very paragraph where this is stated ends with a sentence in which Comte acknowledges that "Lamarck showed by far the clearer and profounder conception of the organic hierarchy." [1] From our point of view, however, Cuvier was right in this respect too. So, Comte's last assertion is also wrong, which means that to choose this as a subject is not the best way to give a positive idea of him. But there are two reasons for this choice: first, it deals with classification, and classification remains the main contribution of biology to the methodology of the sciences; second, it throws light on one of Comte's central ideas, the close relationship between biology and sociology, between the animal series and the social series.

Besides species fixity, there was indeed a second point of disagreement between Lamarck and Cuvier, relating to the existence or nonexistence of an "animal series." The biologist cannot be content with the establishment of the various species, kinds or classes of animals; he needs to go one step further and to coordinate the various classes he recognizes. Cuvier proposed to distinguish four branches (vertebrates, molluscs, articulated, zoophytes) and gave up on finding any continuity or hierarchy between them. Lamarck, on the contrary, was still, as it were,

[1] Comte, 1853, t. I: 414; At the same time she translated the *Course*, H. Martineau "freely condensed" it, with Comte's authorization, who, later on, found this abbreviated version preferable to the original one. If it made the book more readable, it was at the cost of a loss of precision. For this reason, when necessary, I shall give the French text.

an adept supporter of the old idea of a scale of beings ("échelle des êtres", *scala naturae*). He thought it was possible to arrange all animal forms in a unique series, illustrating the progressive attainment of "Nature's Plan", *i. e.,* according to various degrees of perfection.[2] As to Comte, he took his view of Lamarck from his close friend, Ducrotay de Blainville, who was elected to the Chair of Cuvier in the *Museum*, but always showed a pronounced preference for Lamarck and for a unique, serial and ascending animal series. [3]

In what follows, I shall proceed in a regressive way, taking my point of departure in Comte and more specifically in what he says about the way the social series extends the animal one. The point belongs to a central theme in Comte's philosophy, namely, the close connection existing between sociology and biology. In order to understand this idea, we shall go back to biology itself and look at what Comte says about the animal series. The next step will then consist of going from Comte to Lamarck and to his controversy with Cuvier. In light of today's understanding, Lamarck, and consequently Comte, was wrong. But it would be unfair to cling to this conclusion. The animal series was not only a new version of the *scala naturae*, but it was also a way to introduce a genetic approach, which was totally missing in Cuvier. It is precisely in this context that the notion of the "influence of circumstances" is introduced, and we shall therefore end with some words about environment and transformism.

2. The two series.

2.1. Biology and Sociology.

From the sociological point of view we chose to start from, the main idea is the following: "This [*i. e.* the social] series is like the animal hierarchy, of which it is in fact a kind of special prolongation."[4] Its most explicit formulation is to be found in the first

[2] « Il est donc vrai de dire qu'il existe pour chaque règne des corps vivants une série unique et graduée dans la disposition des masses, conformément à la composition croissante de l'organisation, en s'élevant, dans le règne animal, des animalcules les plus simples aux animaux les plus parfaits » (Lamarck, as quoted in Guillo, 2003, p. 125).

[3] Between the series as given by Blainville and the series as given by Lamarck, there are big differences, but the main ideas are the same. About Blainville's contribution to the subject, see Guillo 2003 : 200-209.

[4] Comte, A. (1853, t. 2: 356); translates: "la série sociale se présente rationnellement comme un prolongement spécial de la grande série animale" (Comte 1830, vol. 2 : 486).

page of lesson fifty-one of the *Cours de philosophie positive,* entitled *Social dynamics, or, theory of the natural progress of human society*:

> If we regard the course of human development from the highest scientific point of view, we shall perceive that it consists of educing, more and more, the characteristic faculties of humanity, in comparison with those of animality; and especially with those which Man has in common with the whole organic kingdom. It is in this philosophical sense that the most eminent civilization must be pronounced to be fully accordant with nature, since it is, in fact, only a more marked manifestation of the chief properties of our species; properties which, latent at first, can come into play only in that advanced state of social life for which they are exclusively destined. The whole system of biological philosophy indicates the natural progression. We have seen how, in the brute kingdom, the superiority of each race is determined by the degree of preponderance of the animal life over the organic. In like manner, we see that our social evolution is only the final term of a progression which has continued from the simplest vegetables and most insignificant animals, up through the higher reptiles, to birds and the mammifers, and still on to carnivorous animals and monkeys, the organic characteristics retiring, and the animal prevailing more and more, till the intellectual and moral tend towards the ascendancy which can never be fully obtained, even in the highest state of human perfection that we can conceive of. This comparative estimate affords us the scientific view of human progression, connected, as we see it is, with the whole course of animal advancement, of which it is itself the highest degree (Comte 1853, t. 2, p. 149).

The dependence of sociology on biology presents many aspects. Only one of them, namely progress, which is the subject matter of social dynamics, will retain our attention. The idea is so central to Comte's philosophy that it was already expressed in the *Opuscule fondamental* of 1822: "la civilisation est assujettie dans son développement progressif à une marche naturelle et irrévocable, dérivée des lois de l'organisation humaine."[5] There is no mention of series, but the idea is the same. Not only is human nature the *condition* of social progress but there is no need to go to sociology to get the idea of progress, for it is already present in biology, and social progress is an extension of the progress we find in the succession of animal life. Biology offers the scientific basis of the idea of progress.

2.2. From Sociology to Biology: the animal series, 1.

In order to understand social progress, we are thus driven back to biology. The main ideas were already present in the passage we just quoted. The first one, the very idea of series, may be seen as an outgrowth of the notion of the animal kingdom, or as Comte prefers to say, of animal life. Animals can not only be considered as forming one single class but they can also be arranged in one single series, which amounts to introducing a progression between the elements: they can

[5] "Civilization, in its progressive development, is subject to a natural and irrevocable march, derived from the laws of human organization" (Comte 1854, vol. 4, app. p. 89)

be arranged in a pre-established order. In the second place, the progression is also an improvement (*perfectionnement*): the phenomenon being studied here, animality, becomes more and more complex, more and more perfect. That is the reason why biological evolution gives the first scientific examples of progress. This second component goes together with two other ideas: the idea of type and the idea of degree. The former is like limit in mathematical series: it denotes that element toward which the progression tends, without being always able to reach it. Moreover, the existence of a type (or type-species) plays a methodological role, because, as a rule, a phenomenon is best studied where it exists with the greatest intensity. In this case, the type is Man, humanity being the accomplishment of animality, as shown by the progresses of the nervous system.[6] On the other hand, once the type has been established, the animal series is also an animal hierarchy. There are lower and upper forms of animal life, according to the degree to which they exhibit the characteristic attribute of the species type. It is like a ladder with many rungs and, as with a ladder, we can go both ways, in ascending or descending order.

2.3. From Comte to Lamarck: the animal series, 2.

What Comte says is essentially Lamarckian, which comes as no surprise, if we consider that, on this point as on many others regarding biology, he follows Blainville, who sided with Lamarck against Cuvier (Blainville, 1845, t. 3: 371-411). The famous controversy between the two biologists was studied many years ago by Daudin. His book is still the best account available and, in what follows, I shall rely mainly upon volume two: *Les classes zoologiques et l'idée de série animale,* which is entirely dedicated to this quite intricate topic. What is at stake is clear: the principle of subordination of characters tells us how to form natural kinds, but the question remains: once you have set up the six main groups of animals, how do you coordinate them?

Let us begin with Cuvier. Quite early on, he voiced his objection against the idea of a scale, or chain of beings (Daudin (1926-27, t. 2: 83-86). As an anatomist, he had noted that the degradation of organs could go in various directions, and not only one. Like his contemporaries, he had understood that zoologists could not be

[6] This explains the methodological revolution introduced by biology, which starts from man, as the best known of animals, and proceeds, not from simple to complex, as before, but the other way round, from complex to simple.

satisfied with merely establishing classes and he acknowledged they had also to be coordinated; however, he proposed to do it in an entirely new way that was incompatible with the idea of series. He claimed that the correct way to proceed was to apply to zoology the same principle of subordination of characters that Jussieu had applied in botany. Consequently, we have to change the hierarchical level of molluscs: they are not on the same level as a given class of vertebrates but of vertebrates in general. If it is so, we are compelled to give up the idea of a single series and recognize instead the existence of four independent divisions or branches, each one exhibiting an *organization plan* of its own.

It may seem strange that, in our account, Lamarck comes after Cuvier, but it agrees with the fact that, in this controversy, he is essentially reacting against his younger colleague's new propositions. If the position Lamarck argues for is indeed an old one, he takes into account the new data his adversary had discovered in compared anatomy, and he brings new arguments in favor of the old ideas. The controversy is not about facts, but about the right way to interpret them. The animal series is conceived as the realization of Nature's plan. Lamarck takes the idea from Linnaeus, but he gives it new meaning, not only static but also dynamic. It is not the mere coordination of living beings; it is also a process of formation. Indeed, what he is after is not what Cuvier was seeking. He contests that the purpose of zoology could be reached by merely extending the principle of subordination of characters. What he purports to study is the relationships living beings have with one another; and such a study is quite different from the mere search for characters: it has to consider not only the internal organization, as required by Cuvier, but also the external conformation. Moreover, both are only means to the overall goal of this study: to bring together all animals into a systematic scheme, in such a way that each of them be, as it were, defined by its location in the scheme (Daudin 1926-27, t. 2: 90, 117-123). — However, the old ways of thinking have not disappeared. When Lamarck has to develop his conception, he often contents himself with translating the familiar static scheme into a dynamic language and we find him reverting to the ideas that were operative in the traditional classifications: continuity and gradual progress toward a type conceived as exhibiting animality in its most perfect form.[7]

[7] « Lamarck ne pensait la transformation des espèces qu'à partir de la continuité ontologique qui était celle de l'histoire naturelle des classiques. Il supposait une gradation progressive, un

However, Lamarck quickly saw that it was far from easy to put all the available facts into a single linear series. In order to solve the difficulty, he had to weaken his thesis and to introduce new considerations. Strictly speaking, only the bigger units of classification (groups or families) can be put into such a series. At the lower level, there is no such thing as a linear series; if we want to include species or even types, what we get looks rather like a ramified tree (*une série rameuse*). Such a position amounts to distinguishing between a progression we should be entitled to consider as regular and linear and the existence of anomalies which disturb regularity; and it is in order to account for those anomalies that Lamarck turns to the influence of external circumstances (Daudin, 1926-27, t. 2: 150-152).

The controversy between the two French biologists has long been settled. Cuvier was right not only about species fixity but also in holding that, with the principle of subordination of characters, botanists had found the logical tool needed for the correct solution to the difficult problem of animal classification. Lamarck's error came from the confusion he made between two different questions: the proper demands of classification and the search for a genetic explanation of the various forms of animal life (Le Guyader, 2000: 346-53). As he sided with Lamarck regarding the animal series, Comte too was wrong and this shows one more instance of his lack of perspicacity in scientific matters, along with his condemnation of stellar astronomy or cellular theory. However, it would be unfair to quickly blame him. At the time, the situation was quite intricate: if the conceptual scheme of the linear series was the poorest one from a taxonomic point of view. It was also the most apt to suggest transformism, while a taxonomy based on subordination of characters, although a significant scientific progress seemed to support fixism. Comte was not the only philosopher of science to err. Under his influence, Mill, too, upheld a position in favor of animal series, and his arguments are not to be discarded without examination (Mill, 1843, Bk. III, ch. viii: *Of classification by series*).

3. Transformism and Environment Theory.

Until now, no reference has been made to transformism and to the hereditary transmission of acquired characters, which is a point at least as important as the

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perfectionnement non interrompu, une grande nappe incessante des êtres qui pourraient se former les uns à partir des autres » (Foucault, 1966, p. 288 ; cf. Foucault, 1970).

existence and the nature of the animal series. As the two points are interrelated and as the former allows a more positive look at Lamarck, as well as at Comte, some brief comments are in order.

As already mentioned, transformism was a way to meet the difficulties raised by the effective construction of the animal series. The variety of animal forms was not attributed solely to "Nature's plan," as in the first theory, but also to the joint action of two factors: Nature's plan, as before, which accounted for the approximate regularities in the progressive complexity of animal life, but also the influence of circumstances, which accounted for the various anomalies observed in the realization of this plan. This last factor is only "a fortuitous and consequently variable cause," which acts only to modify "the first and predominating cause,", namely, nature.[8] With this new and fruitful insight, Lamarck may be seen as the forerunner of environment theory and what Comte says in this respect is a good example of the balanced way he appreciates Lamarck's place in history: he praises him for having been the first to stress the importance of environment in biology; but he blames him for not having given it a satisfactory formulation. On the one hand, Lamarck has clearly seen the fundamental dualism of the organism and its environment, which is constitutive of life. Long before Comte, he criticized Bichat's definition of life as the sum of the functions which oppose death. Such a conception assumes living beings to be, as it were, immortal: what lies outside the organism is supposed to be hostile and death is attributed to exogenous causes. Actually, death, natural death, is the result of endogenous processes. As to environment, without it, life would be unimaginable; far from destroying life, it is the main cause of its development.

Lamarck, however, went too far and greatly overestimated the action of circumstances. His mechanistic conception denies any spontaneous activity to the organism and gives nearly unlimited power to environment. A sound theory of environment must recognize that the action goes both ways: just as the environment modifies the organism, the organism modifies the environment, and this is already the case at the vegetal level. Between the organic and the inorganic world, there is a complex system of action and reaction, which aims toward an equilibrium. Industry, that is, man's action upon the external world, by which he substitutes a natural order by an artificial one more suitable to his needs, has to be understood in this

[8] Lamarck quoted in Daudin (1926-27), t.2: 224. This conception is the second of the three stages of Lamarck's conception of the role of circumstances, see Daudin: 218-234.

framework, as an instance of a phenomenon which is co-extensive to life. In this case, as in many others, sociology depends on biology.

4. Conclusion.

This last aspect of Lamarck's contribution to biology is perhaps the most fruitful one but, as said in the introduction, it had already been studied and, in order to present the Lamarckian heritage in Comte, I chose instead to focus on the second point for which Comte credits Lamarck; namely, his understanding of the nature of the animal series. Such a topic was not the most appropriate to give a positive image of both authors, as it appears that Lamarck was mistaken twice: about species fixity of course but also about the principles of classification. This first conclusion is neither to Lamarck's nor Comte's advantage, but it would be unfair to stop there and two more points are worth considering. First of all, classification is a very difficult subject, which reappears periodically. If, on the one hand, Lamarck remains a man of the Eighteenth Century, sticking to ideas which had to be relinquished, on the other hand, the genetic, dynamic point of view for which he argued was far from sterile and one must remember that Cuvier, too, missed one dimension of the problem. Behind their controversy, there are two ways of thinking which are not limited to biology and are still alive today. Recently, as shown by cladistics, our taxonomic principles have been deeply modified and further revisions are not to be excluded. In the second place, by studying what Comte says about Lamarck, we get some idea of Lamarck's reception. It is sometimes said that his ideas were quickly forgotten and had to wait until Darwin's time to be rediscovered. Such an assessment does not seem quite accurate. Lamarck's influence on Comte is certain and quite extensive. If we consider the place of positivists among French biologists around 1850, we have some grounds to assume that, at that time, Lamarckism was still alive. A final word: Besides Darwinism, there is a social Darwinism. What I said shows, I hope, that the relationship between biology and sociology is as old as sociology itself, and, from the fact that Darwin is a better scientist that Lamarck, it does not follow that the sociology inspired by Darwin is more scientific than the sociology inspired by Lamarck.

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